GAS JOURNAL, APRIL 1, 1942

VOL. 238 94th YEAR No. 4115

EDITORIAL NOTES

THE INDUSTRY'S FUTURE NEEDS

WE thought that the announcements on planning made by the Government last February were sufficiently explicit of its aims. A central planning authority with very wide powers and responsibilities was then established and it was made clear, as far as we could interpret the situation, that planning was definitely a national policy and by no means a subsidiary activity. At the time we spoke of the need for the orderly assembly and clarification of Gas Industry views, and since then we have commented on the activities of the Gas Industry's own Post-War Planning Committee and have put forward certain suggestions regarding the work. Since February, too, apprehension has been publicly expressed at what has been described as the increasing tendency of the Government to concern itself at the present time with this problem of post-war reconstruction in its varied forms. It has been openly contended that we are in danger of devoting too much attention to matters having no relation to the struggle on which we have embarked. On the other hand, in spite of the Government's statement in February, there are those who consider the present position as bewildering and even chaotic; they urge that the Government should at the earliest possible moment make some further statement about planning, since the attitude and powers of Lord Portal, who succeeded Lord Reith, appear to them somewhat obscure. There are those who think that if we are not careful the end of the war will find us just as ill-prepared for peace as we were for war.

We have no grounds for assuming that the policy of the Government in regard to planning has changed or that last month's changes in the Ministry portend a new attitude. Certainly on many sectional fronts discussion on planning continues with increased rather than abated vigour. Three weeks ago we commented on the relation of gas to the activities in planning of the Ministry of Works. Last week there was news of the Post-War Reconstruction Committee of the Road Transport Industry. In the 10 years before the war 67,000 people were killed in accidents on the roads and more than 2,000,000 were injured. Accidents happened largely because the roads had been constructed in the absence of plan. Last week-end the Town and Country Planning Association held a conference at Cambridge the purpose of which was to define the principles and agree on the methods by which the needs of industry and business, and of their workers, can be reconciled with the needs of agriculture and rural life. The subject, of course, is one of importance to the Gas Industry. Several of the industries suggested as being especially suited for location in agricultural districts normally use gas very extensively in their processes. Coupled with the location of industry are the migration of population and the establishment of new communities. All this must have its bearing on the future of the Industry, which will find its problems of distribution and maybe of manufacture vastly changed. It came as no surprise to us that gas came in for no comment in the Papers presented, but that the need was voiced for a comprehensive survey of "ways of securing the widest possibly distribution of electricity on a basis of pooled costs." We should like to know the plans of the Gas Industry in reference to the possible widespread distribution of gas in rural districts. We hope that full cognizance is being taken of thought and trend in regard to planning in this and many other directions, and that we shall not see in this country what has taken place in New Zealand—the banning of gas in State houses.

In his Presidential Address to the Southern Association, published on later pages of this issue of the "JOURNAL," Mr. G. le B. Diamond mentioned this matter of planning for the future, and he shares our views regarding it. Paramount is the winning of the war; yet we must examine the structure of our Industry and the factors to be taken into account in any scheme of re-organization. We must prepare for peace, and it may well prove that some re-organization of the Industry is necessary during the war. We must keep in touch with current thought and trends, and the Industry must be made to realize seriously that it will gain in proportion as it is prepared to give. In the past it has given too little to its personnel by way of both money and consideration, the while it has chanted incessantly about "high qualifications" and all the rest of it. As example of "consideration," it is only a comparatively few years since chemists in the Industry were either snubbed or treated with a tolerance strangely farcical in what is undoubtedly a chemical industry. The importance of those on the service and utilization side of the Industry has been voiced *ad nauseam*—with, for the most part, tongue in cheek. It was with the recruiting and training of personnel of all grades for the Industry in the future that Mr. Diamond largely dealt in his Address, and he had many pertinent suggestions to offer which merit attention. Recruitment and re-settlement of staff after the war will bring problems which call now for imagination and foresight, and in this regard the suggestions are, we think, apposite and helpful.

TAR FOR GAS PRODUCTION

THE Industry is aiming at the production of as many gaseous therms from every ton of coal carbonized as is consistent with national demands for gas and coke and for the derivatives of carbonization, among the latter notably tar. This is not a time for considering in any narrow sense the economics of gas production—whether or not it would "pay" the Industry to produce x therms of gas plus y therms of coke and z therms of tar. The Industry will do what it can to treat to the best advantage what coal it receives—and 18 million tons is very little compared with total coal production—and produce for the nation what it demands. We think we are right in interpreting national wartime demands quite simply as more gas, more coke, and more tar. What we have to do is to strike a balance between these demands. Of course, coke and tar can be gasified; but to-day neither coke nor tar is a drug on the market, and pitch ought not to be anything in the nature of a drug.

For obvious reasons tar is required for its creosote content. The demand for creosote outstrips supply and we have no hesitation in suggesting that the demand will become more insistent. From a national point of view we think it might be an error at the present juncture to jeopardize creosote production by gasifying it. That view, however, in no way prevents us from publishing in our issue to-day an account of a new process for gasifying tar in continuous vertical retorts—or, rather, not so much an account of the process as an outline of the results achieved by its application at a gas-works in the South of England. Over many years much study has been devoted to the cracking of tar for gas production in coke ovens, horizontal and vertical retorts, and in water gas plant, though we cannot think that even under peacetime conditions the economic position was sufficiently elucidated to justify cast-iron opinion for or against. It is claimed for the new process that it successfully overcomes any technical difficulties, and that by its use the yield of gas and benzole from continuous vertical retorts

can be materially increased. The process is sponsored by United Kingdom Coal Products, Ltd.; it is based on work at Erith and Denton in this country, at Pawtucket, U.S.A., on the operation of vertical retorts by the Blackstone Valley Gas and Electric Company, and on research by Universal Oil Products Company. The system, known as the "Carburet" system, consists of injecting a suitable mixture of tar with "certain carrier gases" into the retort by a specially designed injector developed as a result of research work in conjunction with the firm of Peabody & Co. Due to the war, technical details of the system are withheld.

We set out the results of the gasification of tar by the "Carburet" system, and it will be seen that apart from more gas being obtained from a given quantity of coal as normally carbonized, the claim is made that the coke produced is decidedly more reactive than vertical coke made without tar injection into the retort. Figures for possible increased benzole recovery are included. Regarding the financial aspect (and we have suggested that at the present time this cannot rightly be regarded as of major importance) calculations are made on the basis of a tar injection of 24.5 gallons per ton of coal carbonized, which, it will be argued, is a high rate. A net profit on the process is adduced of round about 5s. per ton of coal carbonized. At first blush this may seem, from a peacetime angle, to be highly attractive, with the cost of tar taken at 2½d. a gallon. But we would direct attention to one figure only on the credit side of the computed financial balance-sheet, and that is the 6d. a therm at which the additional yield of 16 therms of gas is assessed. We are open to correction, but we think that 6d. a therm of gas into holder is in excess of even wartime practice. Of course, if we assumed a figure of 1s. a therm of gas into holder—and as far as we can see the computation is one of manufacturing costs—then we should have a still more startling profit. However, we will leave our readers to make their own balance-sheets. Perhaps they will regard 2d. or 3d. a therm of gas into holder as more reasonable, and they will draw their own conclusions.

THE JUNIOR ASSOCIATIONS

CONSIDERING the prevailing conditions we think that the Junior Gas Associations are acquitting themselves extremely well and have cause to be proud of their wartime record. Many of the members of the Associations have temporarily left the Gas Industry to serve the nation in other spheres, either in the Services or in other fields of the war effort for which their specialized skill and training have fitted them. Those remaining in the Industry have added tasks and in many cases additional responsibility. There has been at hand excuse in plenty for not attending the meetings arranged. At the best of times the times of the meetings were by no means best, though we have yet to find a valid reason why this state of affairs was permitted to continue. To meet at seven o'clock at night after a hard day's work was bad enough in peacetime for those who were stationed at, say, 50 miles away from the meeting place. In wartime it is more than doubly difficult with the blackout and travel facilities as they are. So we think that those in such circumstances who staunchly support these meetings deserve a pat on the back for more reasons than one.

Talking of support of the movement since its inception at the end of last century, the "JOURNAL" has, we suggest, done its share, and since the war, in spite of curtailment after curtailment of paper supplies, it has within its increasing limitations recorded much of the happenings of the Juniors. As indication of this, during the first quarter of 1942 one-sixth of the editorial space of the "JOURNAL" has been given to reports of Papers and discussions at Junior meetings. We ought in fairness to add that the quality of the Papers and discussions has to our mind been most heartening and the subject-matter apposite—contributions on calorific value, coke grading, oxide purification under wartime conditions, considerations of the Industry post-war, standardization of appliances, standardization of gas quality in relation to performance at the consumer's burner.

So much for commendation. There remains a matter regarding which we feel sure the "Juniors" are to be criticized, and that is the retention of the term "Junior," which we unhesitatingly aver has no place at this time of day and is misleading. Our views on this were expressed in no uncertain way in our issues of Nov. 26 and Dec. 24 last. Since then we have had the opportunity of discussing the question with very many so-called Juniors, and the abolition of this anachronistic designation is to the best of our belief warmly desired among them. If this is a correct interpretation on our part—and we firmly believe it to be accurate—it seems to us that the Presidents of the existing Associations should take more than mere passing notice of it, and that the opinions of the Senior Associations and of The Institution of Gas Engineers should not only be sought but freely given, and this in spite of the war. For our part, we regard retention of the word "Junior" as a distinct hindrance to the future technical progress of the Gas Industry, and we hope that its riddance will be given really serious thought during the new sessions on which the Junior Associations will be embarking, and that arguments such as "'Twas ever thus!," or "Let sleeping dogs lie," will be derisively dismissed.

Atmospheric Pollution

The general impression obtained from a study of observations during the year ended March 31, 1941, as set out in the Annual Report of the D.S.I.R. on Atmospheric Pollution, is that the decrease of atmospheric pollution during the past few years has now been reversed. Considering the great increase in industrial activity during the period, however, the increase does not appear likely to be out of proportion to the amount of coal burned. Since the increase is entirely industrial, measurements of atmospheric pollution made during these years of war may give useful information about the production of pollution.

Personal

Mr. JOHN F. JACKSON has been appointed Secretary and Solicitor to the Newcastle-upon-Tyne and Gateshead Gas Company, the appointment taking effect from June last year.

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Mr. S. G. CALLINGHAM, Engineer and Manager of the Woodhall Spa Gas Company, has been appointed to a similar position with the Thornbury Gas Light & Coke Company, Ltd. Mr. Callingham had been at Woodhall for the past ten years.

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Mr. R. FOWLER has been appointed Engineer and Manager of the Woodhall Spa Gas Company in succession to Mr. S. G. Callingham.

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At the annual general meeting of the Cheltenham Chamber of Commerce Mr. A. L. MORRIS, the General Manager of the Cheltenham and District Gas Company, was unanimously elected President for the ensuing year.

Obituary

Our photograph is of Mr. JOHN H. G. HORSTMANN, late Director and Secretary of the Horstmann Gear Company, Ltd., whose death at the age of 45 we reported last week.

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The death has occurred of Mr. WALTER SHADBOLT, a former Manager at Horncastle.

London Juniors' Wind-Up Session

Considering the prevailing circumstances there was a very good attendance at the Annual General Business Meeting of the London and Southern District Junior Gas Association, which was held on March 27 at the Westminster Technical Institute, S.W. 1. Mr. F. O. HAWES, who has acted as President for 2½ years, took the chair.

Following the reading of the minutes of the meeting held on May 23, 1941, the Hon. Treasurer, Mr. S. J. Gibbons, presented the financial statement for the session 1941–42, which showed a balance carried forward of £262. The President then gave a short account of the Association's activities during the session, announcing that the Milbourne Medal has been awarded to Mr. T. S. Ricketts for his Paper on "The Steam Load on Small Gas-Works." (An abstract of the Paper was given in the "JOURNAL" of March 19, 1941, p. 508.) Mr. R. F. Twist proposed and Mr. B. W. Dawkins seconded the adoption of the President's report.

A vote of thanks to the Officers and Council was followed by election of Officers and Council for the session 1942–43:

President.—G. Dougill (Gas Light & Coke).
Senior Vice-President.—G. H. Rodgers (Gas Light & Coke).
Junior Vice-President.—H. G. Kenyon (Lea Bridge).
Hon. Treasurer.—S. J. Gibbons (Gas Light & Coke).
Hon. Auditor.—G. Wilson Smith (Gas Light & Coke).
Hon. Secretary.—C. A. Deas (Tottenham).
Hon. Asst. Secretary.—J. E. Gray (Gas Light & Coke).
Ex-Officio Members: W. A. Howie and G. le B. Diamond, Southern Association of Gas Engineers and Managers.
Council.—L. W. Andrew, J. E. Gray, R. W. Latham, F. Higton, B. W. Dawkins, R. F. Twist, F. C. Smith, and R. J. Pepper.
Representatives on District Education Committee.—T. H. Prater (Isle of Thanet), G. Dougill, G. H. Rodgers, and C. A. Deas.

Votes of thanks to the Press, and to Dr. J. N. Long for the use of the Westminster Technical Institute, concluded the meeting.

Institution of Chemical Engineers

At the Annual Meeting of the Institution of Chemical Engineers held in London on March 27 the President, Mr. C. S. Garland, was able to report that the end of the second complete year of war finds the Institution more firmly established than ever. Its increasing strength is reflected in the figures for membership which, at 1,245 at the end of December, 1941, shows an increase of 67 on the previous year. The decision to hold an examination for admission to Associate Membership was again justified by the results, the candidates entering including one from Rhodesia and one from Natal. Progress, too, has been made towards the drafting of a standard undergraduate course in chemical engineering.

A formal luncheon at the Connaught Rooms, at which Mr. Garland again presided, followed the meeting, and many distinguished guests attended. The President proposed the toast of "Our Guests," and responses were made by Mr. S. Lall, C.I.E., I.C.S., High Commissioner for India, and Lieut.-Col. Lord Dudley Gordon, D.S.O., President of the Federation of British Industries. Mr. Lall spoke of India's need for trained chemical engineers. India, he said, was potentially a very great industrial country, and since the war great strides had been made in the manufacture of chemicals there. He mentioned the manufacture of bleaching powder, the production to Government specifications of indigenous drugs, and referred to the scope offered by the production of chemical fertilizers; and he expressed the hope that in regard to chemical engineering the association between India and Great Britain would be strengthened. Lord Dudley Gordon emphasized the importance of industry's role in world-wide reconstruction, and deplored the tendency exhibited in certain quarters to belittle the truly enormous efforts which were being made industrially by Great Britain in the prosecution of the war.

1942 "Journal" Directory

The following changes should be noted in order to keep the Directory up to date:

Page 38. KIMBOLTON GAS & COKE COMPANY (1920), LTD. Works closed.
„ 80. ABERLADY. G. T. Duncan (Doune), M., *vice* R. S. Taylor.
„ 92. PENICUIK. R. Henderson (Cowdenbeath), M.
„ 96. CORK. S. Doyle, S., *vice* R. Healy, deceased.
„ 122. AUCKLAND. R. Worley (Hamilton), M., G. H. Collins, E., *vice* J. J. Lowe.

Meetings of the London and Counties Coke Association will be held at Gas Industry House on April 20 as follows: Finance Committee, 10.30 a.m.; Executive Committee, 11.15 a.m.; Central Committee, 1.30 p.m.

The General Committee of the National Federation of Gas Coke Associations will meet at Gas Industry House on April 14 at 11.15 a.m.

Kinematic Viscosity.—Owing to space restrictions, continuation of our report of Mr. A. Coe's Paper to the Scottish Junior Gas Association (Eastern District) is unavoidably held over to a subsequent issue.

Turn Out Your Scrap

Scrap iron and steel to the extent of an extra 40,000 tons per month beyond the amount collected in the past is wanted for the vast development of our war industries, and a proportion at any rate of the increased yield must be found by the Gas Industry. Before the war many undertakings were extremely casual, not to say wasteful, in the matter of disposing of their scrap. Then came the appeal in the early months of the war for a general round-up of material, followed by increasingly urgent orders compelling everybody to render unused metal available for conversion into the munitions of war. Unwanted railings have been collected to the tune of many thousands of tons, and once and for all a clear distinction has been drawn between what were almost synonymous terms in pre-war days—"scrap" and "waste." With the pace of the armament programme constantly accelerating, however, the question arises whether everybody in the Gas Industry is yet completely 100% "scrap minded." Two years ago scrap made up over half the weight charged into British steel furnaces and the proportion may be even higher to-day.

A substantial tonnage of scrap can still be unearthed in many undertakings. Old, out of date plant, disused machinery, obsolete vessels and their engines, and old steel-framed buildings could provide an appreciable quota of scrap, and there is no economic reason why such material should lie idle a moment longer than is necessary to arrange for demolition or dismantling. Before scrap iron and steel reaches the foundries it must be graded and prepared, processes calling for technical experience, skilled labour and specialized plant. Mention of the importance of these operations recalls what was probably the greatest salvage feat of all time—Scapa Flow, 1923–1933—when the largest ships of the German Navy were raised by Cox & Danks, Ltd., who are taking an active part in the scrap campaign to-day. Throughout the country, in London, Birmingham, Manchester, Sheffield, and other important centres, they have branches engaged in the grading and preparation of scrap, with plant and equipment available for the demolition of buildings and the dismantling of machinery. The collection of scrap iron and steel should not be confused with activities aiming at the reconditioning of old plant. The present need is for scrap, and nothing but scrap, and it is on this that the Company is concentrating the whole of its efforts.

Much of the scrap handed over to the nation in recent months has been sacrificed patriotically without any thought of payment. Industry has not so far been pressed to make any such sacrifices; indeed there is a fixed schedule of prices for scrap, and those who are able to contribute to the national scrap-heap are properly entitled to payment at so much per ton. The present appeal to industry is not an appeal to the pocket, but a call upon the common sense of everybody concerned to see to it that not an ounce of iron and steel is allowed to stand idle. Compulsion has eliminated much wasteful idleness of scrap, but it has not yet yielded that "total" surrender that the circumstances of the times demand.

Removal of H_2S

A patent (No. 542,814; application date, July 27, 1940) taken out by R. Quarendon and Imperial Chemical Industries, Ltd., relates to the removal of hydrogen sulphide from gas. They point out that it is known that certain micro-organisms—"sulphur bacteria"—present in peat are capable of converting hydrogen sulphide into sulphur, and that it has been proposed to use these sulphur bacteria for the removal of hydrogen sulphide from gases such as coke oven gas and water gas.

However, they add, when peat and other solid sources of sulphur bacteria, such as sand and mud from river estuaries, sewage sludge and agricultural soil, are used as purification masses, they have found that their activity in the absorption of sulphur is very sensitive to the amount of water present. The invention provides a process whereby this disadvantage is overcome.

According to the process hydrogen sulphide is removed from gases by passing them into contact with a purification mass which contains sulphur bacteria and a wetting agent.

EXAMPLE 1.—Town gas to which had been added 0.25% by volume of hydrogen sulphide was passed on a laboratory scale through peat containing 29% by weight of water and 0.003% by weight of a wetting agent sold under the Registered Trade Mark "Calsolene," the volume of gas so treated per hour being 300 times the volume occupied by the peat. The gas leaving the peat was found to contain 0.005% by volume of hydrogen sulphide, which corresponds to a removal efficiency of 98%.

EXAMPLE 2.—A test was carried out on the same gas and under the same conditions as in Example 1, with a peat containing 28% by weight of water and 0.3% of ordinary soft soap. The gas leaving the peat was found to contain 0.009% by volume of hydrogen sulphide, which corresponds to a removal of 96%.

For comparison a test was carried out on the same gas and under the same conditions as in Examples 1 and 2 with a peat containing 28% by weight of water, but no wetting agent. The gas leaving the peat was found to contain 0.19% by volume of hydrogen sulphide, which corresponds to a removal efficiency of 24%.

A Meeting of the Central Executive Board of the National Gas Council will be held at Gas Industry House on Tuesday, April 14, at 1.30 p.m.

SOUTHERN ASSOCIATION OF GAS ENGINEERS AND MANAGERS

Presidential Address*

of

G. Le B. DIAMOND

DURING the past three years circumstances have combined to prevent the holding of meetings. The Southern Association—and more particularly that part of it which lies within the South-Eastern Region—in consequence of its geographical position has been more prone to sudden emergency than other parts of the country. Since we last met at Plymouth nearly three years ago, a vast catastrophe has changed the world we knew so that it will never be the same again. To-day we meet across the span of those tremendous happenings, gratefully observing that our Industry still stands firm and resolute, proud to make its contribution to the national war effort. Moreover, we count it a privilege to be able to congratulate our colleagues who, with fortitude, courage, and endurance, have withstood great perils and hazards in the performance of their duty and have received honours at the hand of His Majesty the King.

Directorate of Gas Supply

October of last year witnessed an event of outstanding importance in the history of our Industry, in the appointment of a Director-General of Gas Supply, for which office the selection of Dr. E. W. Smith has been welcomed with enthusiasm on all sides. We are particularly pleased to recall that Dr. Smith has been a distinguished Associate for many years. He carries with him the good wishes of the Industry in the difficult task which lies ahead. Hitherto the work of the Gas Section of the Board of Trade has been based largely upon the traditional conception of government by regulation, which it has carried out in a friendly and helpful manner. Under the new regime, however, the Board's sphere of influence is now greatly expanded and, among other things, it is called upon "to advise on the steps to be taken to secure the progressive development of the Industry as a public service." This side of the Director-General's work will be watched with the greatest interest.

The one matter of paramount importance is to win the war, and to this task we must devote every ounce of energy. While respecting the views of those who consider that it is premature to plan for peace, I suggest that had we planned for war, much of the failure and disaster which has befallen us might have been prevented. In my view it is not sufficient to win the peace; we must be prepared for it when it comes. To neglect to examine the structure of our Industry and the factors to be taken into account for its reorganization would undoubtedly lead to grave consequences in the post-war world, and this unpleasant fact is now well recognized. It may be that, in the national interest, some re-organization of the Industry will have to be undertaken during the war; but that is another matter.

We cannot escape the operation of the laws of economics, and it can be said with some certainty that the tremendous repercussion of the war on world trade will have a profound bearing upon our national life. It is, therefore, inevitable that, for a long time after the war, imports will be cut to the minimum for want of the means to pay. Should this prove to be correct, a continuation of wartime measures would be involved, and perhaps an even wider extension of the policy of home production, for it will be important to obtain the utmost from our indigenous products. Moreover, there are almost certain to be financial difficulties while the whole machinery of world trade and exchange is being placed upon a new and, it is to be hoped, more satisfactory basis. In conditions such as these any want of efficiency in the operation of individual undertakings will mean some dissipation of our national wealth in the form of coal, at a time when we can least afford such prodigality.

Personnel of the Industry

In order to have a clear appreciation of the problem, we must not lose sight of the extraordinary diversity of qualifications required for the technical and executive staff, in an Industry composed in the main of small and medium-sized undertakings, widely scattered throughout the British Isles. At one end of the scale there is a number of working managers, who are required to be essentially practical, while at the other are the officers of large undertakings, comparatively few in number, but highly qualified in engineering or academic science. It is true that the latter are mainly university graduates, but in between these two extremes there is infinite variety in the type and qualification of candidate required.

The Institution of Gas Engineers should be the certifying body for the whole of the technicians of the Industry. It must be remembered, however, that while its certificates record a certain standard of attainment, they do not necessarily lead to membership. I am not alone in thinking that the Education Committee might consider widening its sphere of action to include syllabuses which would provide for the certification of a much larger class, including chemists, shift engineers, works foremen and working managers, but especially would I like to see provision made for the industrial gas technician, who is a specialist and requires specialist's knowledge and training.

The Gas Education Commitee have put in some splendid work in the face of great difficulties, and can record some solid achievement in the technical guidance they have provided for young engineers. It is, therefore, all the more disappointing to read the criticism of the examiners in the yearly reports and to hear, from time to time, complaints that the right type of young man is not coming into the Industry. This unfortunate state of affairs will be confirmed by anyone who has had the task of interviewing candidates for appointment.

Salaries

At the present time it is not clear how the majority of young men desiring to qualify for higher posts begin their careers, but at one time the premium pupil provided a steady flow of recruits. Unsatisfactory as that system was, it did produce many of the outstanding figures in the Industry. It may be that the pupils acquired by daily contact something of the personality of their masters, though it is more likely that the engineer took pains to see that his pupil was reasonably educated and had the requisite personality to acquire a position later, for there lay upon the engineer some kind of moral obligation to see the pupil safely launched.

It is difficult to see how an improvement can be brought about unless more care is taken to ensure that candidates for appointment possess the necessary educational qualifications, personality, character, foresight, and energy. The question of remuneration and prospects is of immense importance and, unless the Gas Industry is prepared to pay adequate salaries, it cannot hope to obtain the right men. Salaries form such a small proportion of the overhead charges of a gas undertaking that it is not easy to understand why some committees and boards of directors are so parsimonious. A cheap and indifferent employee frequently proves to be more expensive than a highly paid but competent officer. To underpay a good man is morally indefensible, and it is earnestly to be hoped that, in the new order of things, the recommended scale of minimum commencing salaries for engineers and their assistants will be adopted in all cases where there is deficiency.

To many of us the position of the chemist in our Industry seems unsatisfactory, and we wonder whether there is sufficient scope to attract men of ability, or whether a means could be devised whereby a better status might be accorded the chemist who possesses the requisite qualifications.

Text-Books

There is a serious lack of comprehensive text-books, the reason for which may be found in the comparatively small potentialities of the market. Moreover, the immense scope of an adequate work on gas engineering and manufacture is probably now beyond the physical powers, or ability, of any one individual. In this connexion I do not think the Gas Industry has sufficiently acknowledged its debt of gratitude to Alwyn Meade for his achievement in providing the one standard work the Industry possesses—which is now, unhappily, out of print.

I know the Institution has a Text-Book Committee, and I have no doubt that this subject has received consideration, but I should like to see the Council tackle the problem by enlisting a group of specialists to write a chapter, or even a short article, on their own subject and produce a series of volumes which would not only be suitable for the student, but also for the practising gas engineer. There is room, too, for less ambitious works covering the syllabus of the Institution examinations up to the ordinary grade. The difficulties of such an undertaking in wartime are very great indeed, but, as soon as the war is over, there will be a greater demand for text-books than ever before. This question should surely be one of high importance in our scheme of post-war planning.

An up-to-date and enlarged edition of Mr. Evetts' excellent book on the Finance and Administration of Gas Undertakings is also required, for, at the present time, it is very difficult for students to obtain books which will enable them to acquire the rudiments of the administrative and financial side of management. It would be fantastic to suggest that Mr. Evetts, with all his commitments, could undertake such a task, but there are many willing hands by which, chapter by chapter, the work might be done.

* Delivered March 20.

Short Courses of Practical Instruction

The long-term policy is well understood and covers a fair proportion of new entrants to the technical side of the Industry, but what of the large number of employees, from fitters upwards, who have not had the advantages available to-day? Can anything be done to improve their skill, knowledge, and efficiency? I am sure that a great deal can be accomplished to the advantage of the Industry, given the will and enthusiasm for carrying out what is required. Indeed, some substantial steps in this direction have already been taken. The armed forces of the Crown have had to face the difficulty of imparting complicated technical knowledge to large numbers of uninstructed persons, and they have done so with success by the provision of short, intensive, practical courses, coupled with excellent manuals, written with understanding and well illustrated. The medical profession have long recognized the need for continued instruction for established practitioners, and have a well-developed system of post-graduate courses lasting from a day or so to several months. While the conditions obtaining are not strictly analogous to those of our Industry, the two examples serve to illustrate my point.

Before the war, the Watson House short courses of training for fittings staff were made available to seventy-two subscribing undertakings in and around London. They were organized on an ambitious scale and were outstandingly successful. The effect on the morale of the men was considerable, for they came back full of enthusiasm for their work and immensely impressed by the organization they had seen.

The staff of the supply side (practically all those coming into contact with consumers), it has been well said, are the ambassadors of the Gas Industry. Anything that can be done to improve their efficiency will bring a reward out of all proportion to the energy and financial cost of the effort. The Watson House courses will no doubt be available again to the subscribing undertakings, when I hope it will be possible to enlarge their scope.

When we have a good training scheme like this, there is naturally a desire to see it extended to other parts of the country, and there should be no difficulty in doing so, since it is only a question of organization. The Coke Association could also come in with advantage, and courses for technicians in the correct operation of coke-burning appliances could be devised. I believe also that a large number of undertakings would welcome practical instruction for boiler house staff in operating Lancashire and similar boiler plants, with a view to obtaining a higher degree of efficiency, for, outside the larger works, it cannot be said that fuel economy in the true sense is practised.

The foreman class demands our special attention, for upon them depends, to a great extent, the success or otherwise of our endeavours. According to the size of undertaking, we should have a certain number of men earmarked for advancement and given early opportunity of receiving training as prospective foremen. It is here that we come up against formidable problems, for, owing to the scattered nature of the Gas Industry, it is often not possible to find sufficient numbers to make up classes for technology at local educational centres. Thus other methods will have to be found. All this means trouble and expenditure of some money, but I am certain we cannot have too high a standard in the selection and training of our key men.

Welfare and Health in Gas Undertakings

I am not aware of the existence of statistics covering the health of workers in the Gas Industry, but we all know, from personal experience, how free it is from occupational diseases and industrial hazards. There is one exception to this generalization, for epitheliomatous ulceration is known to occur among workers in the tar industry; but it is believed that the number of cases seen in the Gas Industry is very small. Of course, there are the usual minor accidents and illnesses of the influenza and gastric type which account for a good deal of lost time. There is also reason to believe that a certain amount of trouble with hernia might be avoided if greater care were taken to see that employees are medically examined when commencing employment with an undertaking.

Some years ago, with the encouragement and support of my Directors, I commenced on the South-East Coast an extended scheme of welfare with medical supervision. The object was not only to safeguard the Company against employing persons who were physically unfit or likely to become so, but to do whatever should be found possible, by advice or otherwise, to supervise the health of the individual worker.

The Folkestone scheme had as its basis a comprehensive record system for logging individual case-histories, which, under the ethical rules of the medical profession, are confidential and remain the property of the doctor; but there is no reason why a simplified report should not be in the possession of the undertaking. The initial examination of each employee followed the lines of the searching test of the life offices. It is of interest to note that provision was made for ascertaining sense of smell, which is as important for a gas fitter as the colour test is for an engine-driver. The back of the record form was reserved for entries of accidents and illness of sufficient seriousness to be worthy of recording. In the course of six or seven years, the accumulated information was of great assistance to the doctor in giving advice to the Company. The results of this scheme were not only of undoubted value to the Company, but the scheme itself was extraordinarily well received and appreciated by the employees. Moreover, the cost was very small.

The British Medical Association has recently published the Report of a committee specially appointed to investigate the whole subject of industrial medicine. Those who are interested are advised to obtain this Report, which contains very full information on the subject, and advice on the method of selecting a medical officer. It can be obtained from the British Medical Association, Tavistock Square, London, price 6d.

Re-Settlement of Ex-Service Men

At the present time the end of the war seems very far off but, when that auspicious time arrives, we must be in a position to deal with the problem which will arise by the return to civil life of a large number of our employees who have been on national service in one form or another. It will not be a simple matter, for the conditions of civil life will have altered in some respects. Men will have been away from their regular work for a period of three, four, or even more years. Others, who started on some vocation as boys, will now be men with new and wider experience behind them. There will be some who had not started on a career when they joined the Services, and will come to the Industry as late beginners. Unfortunately, some will be unfit or incapacitated, and unable to resume their former occupation.

How shall we tackle the immense task of renewing old skill and refreshing knowledge or providing some measure of usefulness to those who may be shattered in body or health? One thing is quite clear—this particular problem will not solve itself by apathy and hoping for the best. It will need a clear and impartial sifting of the facts with all their implications and, when they are known, the solutions to these problems can be worked out and organized. Young men who have had their careers interrupted by war service while in preparation for higher appointments in the Industry may need some relaxation in the regulations for the Institution Examinations. The provision of intensive instruction to enable them to recover lost ground will also be an urgent necessity. We must remember that these men have given some of the best years of their life to the service of the country. All sections of the community are in honour bound to do all that is possible to re-settle in civil life the ex-service men. In this connexion the Gas Industry must not be backward in fulfilling its obligations, but it should start planning in order that it may find ways and means of solving these problems.

The South-East Coast

The South-East Coast, during the summer and autumn of 1940, was indeed a very remarkable place, for during this period were enacted the evacuation of Dunkirk, the Battle of Britain, and the commencement of cross-channel shelling. All sections of the community were involved to a greater or less extent, and upon this fantastic canvas the gas undertakings and their employees could be seen playing their part. Towards the end of May, looking across the Channel, we saw the frightfulness of war creeping east along the French coast, with huge fires burning and gigantic explosions visible and audible by day and by night. Soon it became apparent, long before any Press comment, that we were about to witness one of the great events of history; and so it was. The miracle of Dunkirk took place on our doorstep. The contribution of the gas undertakings at Folkestone and Dover took the form of helping in whatever way seemed possible, and by the provision of thousands of gallons of boiling water for tea-making. Batteries of gas coppers were set up by fitters working all night and refusing to book time for pay. Collectors and fitters carried stretchers by day and night at the harbour or in the hospitals while others helped on the trains or at the canteens.

In the meantime the Battle of Britain had developed, accompanied by a heavy evacuation of the coast towns. These were uneasy days, with immense and continuous aerial battles going on overhead, while bombs fell haphazard from aircraft being attacked. One undertaking was put out of action three times, but in a remarkably short period and with much ingenuity and improvization, it was quickly in production again. Another had its works dive-bombed on five separate occasions without sustaining damage, although projectiles of the heaviest calibre were used.

About this time the shelling of the English Coast from the other side of the Channel commenced, which added to the burdens of everyday administration. It is worth recording, however, that on one day when there had been intermittent shelling of the town for many hours one collector succeeded in reading and collecting fifty meters, notwithstanding the fact that he had often to go round to the backs of the houses to obtain the keys from the occupants who were in their air-raid shelters.

Throughout this period the staffs of the undertakings with whom I was then proud to be connected carried out their duty with a loyalty and courage which was in full accord with the traditions of their forbears who, through the generations, have stood watch and ward at the gateway of England.

TAR CRACKING TO INCREASE GAS AND BENZOLE YIELD

APPLICATION TO CONTINUOUS VERTICAL RETORTS

THE advantages of increased gas yield, increased benzole yield, and improved financial return per ton of coal carbonized are claimed for a process which has been worked out at a South of England gas-works by United Kingdom Coal Products, Ltd., of 3, St. James's Square, London, S.W. 1, in collaboration with the Managing Director of the Gas Undertaking.

The method used—the cracking of vertical retort tar in continuous vertical retorts—is the result of six years of research and depends largely on the technique employed. The system consists of injecting a suitable mixture of tar with certain carrier gases into the retort by a specially-designed injector which has been developed as a result of some two years' research work in conjunction with the injector firm of Peabody & Co. The constituents of the mixture are pre-heated to a suitable temperature to ensure simple and continuous working and are led into the retort at a position selected, again as a result of research and the study of cracking reactions to ensure that the reactions desired shall take place.

Prior to a test made from Aug. 6 to Aug. 22, 1941, a pre-carburetting test was made. The figures from this pre-carburetting test read as follows:

Pre-carburetting Test

Coal carbonized:

	tons.	cwt.
Yorkshire Main Singles and Clay Cross Singles	252	17
Yorkshire Main Doubles	638	3
	871	0

Total gas made	14,671,000 cu.ft.
Make per ton	16,845 cu.ft.
Throughput of coal per retort per day	5.28 tons.
C.V. after benzole extraction	450 B.Th.U.
Benzole produced by partial stripping	1.02 gall./ton of coal.
Steam to retorts	18–21 lb.
Coke production (special 72 hrs. tests):	
Coke produced	12.72 cwt. per ton of coal.
Coke to producers	3.65 cwt. ,, ,,
Coke for sale	9.07 cwt. ,, ,,

On spot tests the coal gas contained—

CO_2 from 2.2 to 3.0%
O_2 from 2.2 to 4.0%
CO from 12.5 to 13.5%

During this period tests were made by the St. Clair Deville method (condensation at very low temperatures) to determine the total benzole content of the gas after the stripping plant. This was found to be 2.40 gallons per ton. Efficient benzole plants can be expected to recover up to 90% of the St. Clair Deville benzole, and the quantity thus commercially available would be 3.08 gallons per ton.

The preliminary trials with the "carburet" system, as it is named, were made on two retorts, and as these demonstrated the feasibility of the process the system was applied to 16 retorts out of 18 that composed the whole vertical retort installation at the works. At this stage a test lasting 16 days was carried out in August, 1941, in the course of which some 9 or 10 of the retorts were carburetted to the extent of over 20 gallons of tar per ton of coal carbonized. The remainder of the retorts were gas-making or scurfing, but were not carburetted.

In calculating the results it would be incorrect to consider that the whole of the charge was treated with some 10 gallons of tar per ton of coal, but either the basic results for the coal not carburetted must be subtracted in order to obtain the true result for the carburation of half the coal with 20 gallons of tar per ton, or the results must be multiplied by a suitable factor to give the figures which would have been obtained if all the coal had been so treated. The former practice has been adopted in calculating the table of results. It will be seen that the tar used in the retorts subjected to tar cracking was 24.5 gallons per ton of coal carbonized.

During the period 4 p.m., Aug. 6, 1941, to 4 p.m., August 22, 1941, a test was made upon the plant by the United Kingdom Coal Products Company in collaboration with the Gas Engineer. In this period there was made 3.5% of water gas, which was deducted from the total make. The figures obtained in the test, which are based wholly on the coal carbonized in the verticals, are as follows:

	tons.	cwt.
Coal carbonized: Yorkshire Main	681	12
Clay Cross	163	—
Yorkshire Main and Clay Cross (from stock)... ...	293	2
	1,137	14

Total tar injected	10,581 gal.
Tar injected per ton of coal carbonized (average)	9.30 gall.

NOTE.—This tar was not injected into more than about half the retorts at any one time, and the rate of injections in these selected retorts was 24.5 gall. per ton of coal carbonized.

Total gas made	20,426,000 cu.ft.
Make per ton	17,953 cu.ft.
Throughput of coal per retort per day	5.1 tons.
Throughput of coal and tar per retort per day (average) ...	5.33 tons.
C.V. of gas after benzole extraction (average)	451.17 B.Th.U.
Benzole produced by partial stripping	1.36 gall./ton of coal
Benzole remaining in gas (St. Clair Deville test)	3.69 gall.
Total benzole produced (potential yield)	5.05 gall.
Practical yield of benzole	4.55 gall.

NOTE.—This compares with a potential yield of 3.42 gallons, or a practical yield of 3.08 gallons without tar injection.

Steam to retorts	20–24 lb.
On spot tests, the coal gas contained—	
CO_2 from 2.1 to 3.0 %	
O_2 from 2.0 to 3.0%	
Number of jet-hours worked	2,040½

The benzole plant at the works was insufficiently large to extract more than a fraction of the make, and it has been necessary therefore to assume that the make of benzole from the coal when the "carburet" system was operating was the same as from the untreated coal, the remainder of that benzole appearing in the gas as extra therms made from the tar. With this method of computation, all gaseous therms, whether consisting of benzole or normal gases, are assessed at 6d. a therm. Benzole at 12d. a gallon would actually be worth 8d. a therm.

It is considered that the capital outlay in installing the system would not be greater than £30 per retort.

The calculation is based on an installation of 24 continuous vertical retorts, which, when allowing for scurfing, are assumed to have an output of 4.5 tons of coal per retort per day, or 108 tons per day for the whole installation.

The coke produced was found to be slightly denser and harder, but very distinctly more reactive when carburetting as compared with the normal make. The increase in reactivity is explicable in the light of the high reactivity of pitch coke.

The financial result of the process may then be computed thus, all figures being taken to the nearest penny:

	d.	d.
CREDIT:		
Additional yield of gas 16 therms/ton at 6d.	96	
Tar recovered—25% 6 gallons at 2½d.	15	
Additional coke 120 lb. at 30s./ton	19	130
DEBIT:		
Cost of tar, 24.5 gall. at 2½d.	61	
Labour—one man per shift at 12s.	4	
Repairs and maintenance	2	
Sundries, including pumping costs	4	
Depreciation	1	72
Net profit per ton of coal carbonized		58

The tar used in these tests was a mixture of vertical with a little horizontal, but on theoretical grounds vertical-retort tar applied to continuous vertical retorts would appear to be the best material for the purpose.

The benzole yield from retorts on the carburet system was very considerable.

The total benzole content of the gas by the St. Clair Deville test from the straight coal distillation was 3.42 gallons per ton.

On the same basis the benzole content of the gas from the whole plant when an average of 9.3 gallons of tar was being added per ton of coal was 5.05 gallons.

Taking the quantities of coal carbonized in the carburetting test, we have:

	gallons.
Potential yield with carburetting from 1,137.7 tons = 1,137 × 5.05 ...	5,750
Potential yield from untreated coal, 704.2 tons = 704.2 × 3.42	2,410
Potential yield from 433.5 tons of treated coal	3,340

This is a yield of 7.72 gallons per ton from the treated coal or an extra yield of (7.72—3.42)=4.30 gallons by the St. Clair Deville test, the practical extra yield of recoverable benzole being 3.9 gallons.

The Annual Meeting of the Manchester District Association of Gas Engineers will be held at the Midland Hotel, Manchester, on Friday, April 10, at 2.15, when Mr. J. E. Lister Cooper will deliver his Presidential Address.

The Next Meeting of the Gas Education Executive Committee of The Institution of Gas Engineers will be held at Gas Industry House on Tuesday, May 19, at 2.15 p.m. instead of Tuesday, April 21, at 11 a.m. The meeting of the Gas Education Committee provisionally arranged to be held on April 21 is cancelled.

The Next Meeting of the London and Southern District Junior Gas Association will be held at the Westminster Technical Institute, S.W. 1, on Friday, April 24, when Mr. G. Dougill will give his Presidential Address.

Radiation Ltd.

ANNUAL GENERAL MEETING

The Annual General Meeting of Radiation Ltd. was held on March 26 at the Incorporated Accountants' Hall, London.

Mr. J. F. DAVIES (Chairman) said: Before dealing with the Annual Accounts I wish to refer to the great loss we have sustained by the death in June, 1941, of Sir C. Herbert Smith, who was a Director of the Company for fourteen years and for two years the Chairman of the Board of Directors. Sir C. Herbert Smith, as a Chartered Accountant, enjoyed a great reputation in his profession and in the commercial world, and, with his vision and broad business experience, his sound judgment and wise counsel were of great value to the Company.

The Directors' Report and Accounts for the year 1941 have been prepared in a form similar to that of previous years, including the combined statement of assets and liabilities of all the Subsidiary Companies.

The profit and loss account shows the gross income from Subsidiary Companies at £259,279 for the year, an increase of £55,313 for 1941, before charging income tax. Deducting income-tax, and including transfer fees and bank interest, the net income for the year is £130,432, an increase over the previous year of £12,463.

Including the balance of profit, £142,784, brought forward from the year 1940, the total to the credit of profit and loss account, after deducting income-tax, is £273,216, and deducting therefrom the interim dividend paid last October on the Preference stock, and deducting also the proposed transfer of £25,000 to War Damage Insurance Reserve, there remains to the credit of profit and loss account the sum of £231,903; that amount is carried to the balance-sheet above, and deducting the final dividend on the Preference stock and the proposed dividend of 6% on the Ordinary stock for the year 1941, there remains a balance of £147,714 to carry forward to next year—an increase of £4,930 on the amount carried forward a year ago.

In considering the results of the year, it is to be noted that our Subsidiary Companies are obliged to incur very heavy expenditure in connexion with War Risks Insurance and Air Raid Precautions; in addition there are the allowances to married men serving with H.M. Forces. The total expenditure under these three headings during 1941 was more than twice the amount expended in the previous year.

On the liabilities side of the balance-sheet we have now the additional reserve for War Damage Insurance created by the transfer of £25,000 from the profit and loss account.

On the assets side of the balance sheet the principal items are the cost of investments in Subsidiary Companies, £2,392,675, and the amount of £1,373,532, due to Radiation from those Subsidiary Companies. The latter amount includes dividends declared by the Subsidiary Companies for the year 1941, the balance of dividends for past years, and also charges paid by Radiation on behalf of the Subsidiary Companies.

If you will turn to the combined statement of the assets and liabilities of Subsidiary Companies, on pages 6 and 7 of the accounts, you will notice that the fixed assets—Land and Buildings, Plant and Machinery—total £1,137,219, a decrease of £40,259 compared with the corresponding figure for the previous year. This decrease represents the depreciation written off during the year after taking into account additions made during the year.

In addition to War Risks Insurance on our Stocks we have had to pay substantial premiums for War Damage Insurance in respect of fixed assets, and the latter expenditure has been met by transfers from reserves set up in previous years to meet contingencies in respect of buildings and plant. The additional reserve of £25,000 now made in the Radiation accounts is required to meet further War Damage premiums payable during the current year.

Of the remaining asset items on the combined statement, stocks, debtors, and cash have increased by the amount of £333,410. This reflects the considerable additional trading activities of the Subsidiary Companies during the past year.

The further working capital necessary to finance the additions to stocks, debtors, and cash has been obtained partly by a net realization of Investments of £81,000, and partly by expansion in the credit for materials supplied. Our liquid position at December last was better than a year ago by more than £75,000.

Turning to the liabilities side of the combined statement, I have already referred to the increase in creditors.

The next two items, totalling £3,766,207, correspond to the first two assets on the Radiation balance-sheet, and I have already mentioned those items.

The final amount on the liabilities side of the statement is the total of the balances to the credit of the profit and loss accounts of the Subsidiary Companies; the amount, £571,367, shows an increase of £4,035 over last year's figure.

The Subsidiary Companies have been fully employed during the year. It will interest you to know that we have been required to effect substantial increase in the output of our heavy duty gas and solid fuel cooking equipment departments, so as to provide cooking facilities for many thousands of war workers in various districts and for children placed in the country; we have supplied and installed large scale cooking equipment for many hundreds of factory canteens, British Restaurants, hospitals, schools, and other institutions.

The important developments which may be looked for in domestic building and rehousing, particularly as they may affect us, have received our close attention, and we maintain close contact with proposals and plans to deal with the immense task which will arise in satisfying the housing requirements of the people.

The Radiation Companies have many years of practical experience and of close study of the considerable problems connected with domestic cooking, heating, warming and ventilating in all their varying aspects. The benefit of that experience and study is offered to any Authority having responsibility for the housing and welfare of the people, and when the time comes for us to turn our undivided attention to this task we shall be ready with our services.

Planned development will be the keynote of the coming era and it must be the basis of our own efforts. Radiation Ltd. being the holding company of many business has already commenced, and will continue to develop, rationalized production of domestic appliances involving the minimum of maintenance in use.

Standardization as between our different works with concentration of effort has led to notable advantages and may be expected to be of increasing service in the future. All developments and improvements will be introduced and launched by all the Radiation firms simultaneously, in accordance with their interpretation of planned production.

One matter connected with post-war house-planning and development which I feel will need to be seriously considered is the question of efficient ventilation.

In planning the kitchen it should be arranged that smells associated with cooking be extracted directly, and not be allowed, as is so often the case at present, to permeate the whole house. Effective flues are required for the cooker and the wash boiler, whatever type of appliance is used.

For the living room and the bedroom careful consideration will, I believe, be given to the provision of adequate ventilation, which is especially a requisite in a room to be occupied for any length of time, whatever the form of heating or even with no heating at all. Further, if there be an adequate flow of air through the building the fabric itself is kept dry. Many structures are never entirely damp-proof and disposal of excess moisture will, I trust, be ensured in the future.

By providing a chimney and an air inlet to a room hygienic conditions can be ensured, and in addition the occupier of the house is left with a free choice of the mode of heating he or she may adopt. Ventilation in bedrooms is perhaps even more important than in living rooms, and the practice of omitting flues from bedrooms, which was the tendency before the war, is undesirable. The small financial saving which results is a false economy from the health point of view.

From the Directors' Report you will have seen that Mr. Lawrence A. Bratt was appointed a Director during the year. Mr. Bratt has been for many years Chairman and Managing Director of Bratt Colbran, Ltd., one of the companies in our group. His colleagues heartily welcome him to the Radiation Board, where his specialized knowledge and experience will be of great value to us.

I wish to express appreciation of the excellent effort of the staff and workpeople at the various works during the past year. Many of our employees have joined the Services and we pay our grateful tribute to them. Some, I regret to record, we shall not see again.

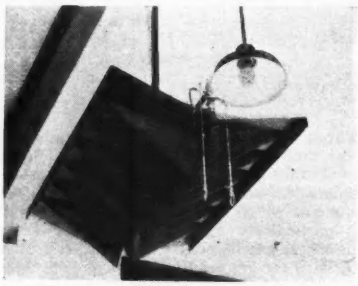
I am glad to say that there has been continued progress in the purchase of National Savings Certificates by our staffs and workpeople, and they are to be congratulated on the contributions they are making.

The report was unanimously adopted.

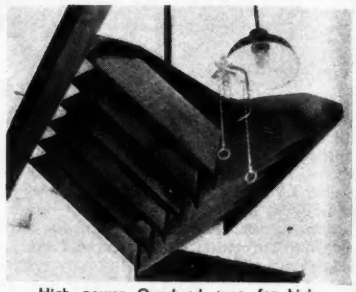
We have received a copy of the *Steam Boiler Yearbook and Manual*, for 1942. As usual it contains much valuable information on a great variety of technical problems which vitally affect the steam and combustion engineer. No doubt it will also be very helpful in the national effort for fuel economy.

The fact that goods made of raw materials in short supply owing to war conditions are advertised in the "Journal" should not be taken as an indication that they are necessarily available for export.

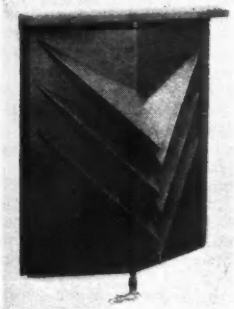
RADIANT HEATERS FOR FACTORIES



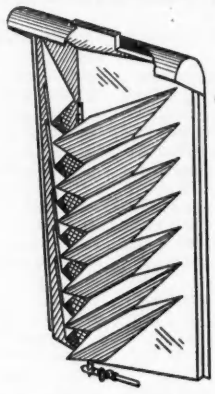
Medium power Overhead type for low fixings, consumption up to 40 cubic feet per hour.



High power Overhead type for high fixing, consumption up to 60 cubic feet per hour.



Small Vertical type with external flue, consumption up to 40 cubic feet per hour.



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Gas Products Prices

The London Market Mar. 30.

There is very little movement in the prices of Coal Tar Products, as many of the usual markets are no longer available and pitch/creosote mixture as a fuel oil has taken their place.

Pitch is still a nominal market, but for such quantities as are being sold the price ranges between about 45s. and 50s. per ton. Creosote is about 5d. to 6d. per gallon. With regard to refined tar the price for next season has not yet been definitely fixed and it is expected that this will come under a Direction to be issued by the Coal Tar Controller. Pure toluole remains 2s. 5d. per gallon under the Ministry of Supply Toluene No. 2 Order. Pure benzole is about 1s. 10d., 95/160 solvent naphtha is 2s. 5d. to 2s. 9d. and 90/160 pyridine remains about 13s. 6d. per gallon. All the above prices are *ex* Makers' Works. Naphthalene prices are unchanged and are in accordance with the Control of Tar Order 1941. The Order refers to maximum prices, and the figure for refined crystal naphthalene in 2-cwt. bags and 4-ton lots is £23 per ton delivered.

The Provinces Mar. 30.

The average prices of gas-works products during the week were: Pitch and Crude Tar,* Toluole, naked, North, 1s. 10d. (controlled by the Control of Toluene No. 2 Order, July 5, which fixes the maximum price at which this material may be sold). Coal tar, crude naphtha, in bulk, North, 11d. to 1s. Solvent naphtha, naked, North, 1s. 9d. to 1s. 10d. Heavy naphtha, North, 1s. 9d. to 1s. 10d. Creosote, *ex* works, in bulk, North, liquid and salty, 4½d. to 4⅝d.; Scotland, 4½d. to 4⅝d.; low gravity, 4½d. to 4⅝d. Fuel Grade, 4d. to 4¼d. Carbolic acid, 60's, 3s. 7½d. to 3s. 9d. Naphthalene, £15 to £20. Salts, drained, £6 to £6 10s.; whizzed 72°, £7 15s.; 78°, £9 5s. Anthracene prices fixed by Controller. Heavy oil: Unfiltered anthracene oil (min. gr. 1,080), 6d. to 6½d.; filtered heavy oil (min. gr. 1,080), 6½d. to 7d.; heavy anthracene oil gr. less than 1,080, 5¾d. to 6d.

*In regard to pitch and crude tar prices we would ask readers to refer to the editorial note on p. 396 of the "JOURNAL" for Sept. 10, 1941.

Tar Products in Scotland Mar. 28.

Steady throughput is maintained. Refined tar 5d. to 5½d. home and 5d. to 5½d. per gallon export. Creosote oil: Specification oil, 6d. to 6½d.; low gravity, 7d. to 7½d.; neutral oil, 6½d. to 6¾d. per gallon; all *ex* Works in bulk. Cresylic acid is well looked after. Values are strong. Pale 99/100%, 5s. to 5s. 6d.; Pale 97/99%, 4s. 6d. to 5s.; Dark 97/99%, 4s. 3d. to 4s. 6d. per gallon; all *ex* Works in buyers' packages. Crude naphtha: 6½d. to 7d. Solvent naphtha: 90/160 grade 2s. to 2s. 3d. and 90/190 Heavy Naphtha 1s. 9d. to 2s. per gallon. Pyridines: 90/160 grade 13s., and 90/140 grade 15s. per gallon.

Middlesbrough Corporation Gas Committee is applying to the Board of Trade for exemption from the proposed gas rationing restrictions on the grounds that the town's gas is supplied from surplus coke-oven gas from the local works. A similar concession was granted during the Great War.

The Royal Institute of British Architects is organizing a Reconstruction Exhibition which it is hoped will open at the National Gallery in September. Mr. Stephen Lacey, of the National Gas Council, has been appointed to serve on the Management Committee. Five members of the R.I.B.A. and five members representative of all the interested trades organizations are to form this Committee. The Exhibition will probably remain open for two or three months at the National Gallery, but all exhibits will be designed for travelling, and can later be shown in provincial centres.

The Acting Secretary of the Women's Gas Council was one of the representatives at the meeting with Sir William Beveridge and Sir Stephen Tallents when they invited several women's organizations to meet them with a view to obtaining a woman's angle on the proposed rationing of fuel. The Acting Secretary has also been elected to the Executive Sub-Committee formed by the Housing Centre, and consisting of representatives of many women's associations, which is organizing a Women's Conference and Exhibition on Housing and Planning to be held in May. It is hoped that the exhibition will be open to the public for one or two weeks.

The Giant Indicator which was a prominent feature of Windsor's Warship Week was designed and supervised by the B.C.G.A. Studio through Mr. J. G. Abbott, of the Windsor Royal Gas Light Company, who was Chairman of the local Warship Publicity Committee. The indicator stood in the Castle grounds in a commanding position overlooking the High Street. This striking sign was 50 ft. long by 17 ft. high, and showed a lighthouse at one side throwing its beam across to illuminate a large battleship. Along this beam was the figures indicator below which a "cut-out" of H.M.S. "Windsor" (itself 6 ft. long) ploughed its way through a twilight sea carrying a pointer to mark each day's total as it approached nearer to the objective. An important feature of the week was the daily ceremony at the indicator to show the latest figures, which attracted large crowds and did much to inspire the town to surpass the original aim.

The Bradford Corporation Gas Department co-operated with the Parks Department in their successful "Dig for Victory" week from March 9 to 13. They displayed a sectional greenhouse showing a gas-fired "Gardenia" boiler and had a stand to popularize the use of sulphate of ammonia. During the week a "Ladies' Day" was held, when the Lady Mayoress opened a demonstration of wartime cookery and presentation of B.C.G.A. films.

On Thursday last the Heat Supplies Committee, headed by the Chairman, Captain Charles Waterhouse, M.C., M.P., Parliamentary Secretary to the Board of Trade, paid a visit to the Control Room of the London Regional Gas Centre. The guests, who were received by the Management Committee of the London Regional Gas Centre, were given an opportunity to study the methods adopted in the London Area to deal with damage to gas undertakings caused by enemy activity. After examining the Centre, the visitors went on to inspect the main Control Room of the Gas Light and Coke Company. Captain Waterhouse was accompanied by Dr. E. W. Smith, Director-General of Gas Supply, and Deputy Chairman of the Heat Supplies Committee, and other members of the Committees.

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GAS STOCKS AND SHARES

Despite the fact that it was London's Warships Week, the repayment of certain non-trustee Canadian stocks led to considerable activity in some sections. The Gas Market was well to the fore in this connexion and quite an appreciable volume of business was recorded. Doubtless many investors, having lent to the Government as much as they can possibly afford, find it necessary when any such spare capital becomes available to look around for something better than a 3% return compatible with safety. The high yields still obtainable on a number of gas stocks have turned their attention to this market among others, with a consequent heavier turnover and slow but sure rise in prices.

The following quotations were changed during the week and it will be noticed that the two Malta and Mediterranean preference stocks speedily recovered the heavy drop of the previous week, while Romford 4% debenture closed 11 points higher:

OFFICIAL LIST

Gas Light Units	12/6—13/6	—/3d.
Ditto 4 p.c. Pref.	66—71	—1
Ditto 3 p.c. Deb.	79—82	+1
Ditto 3½ p.c. Red. Deb.	88—93	+5
Tottenham Ord.	83—88	+1
Ditto 5 p.c. Pref.	85—90	+3
Wandsworth Ord.	76—81	+1

SUPPLEMENTARY LIST

Malta and Mediterranean 7 p.c. Pref.	45—55	+35
Ditto 7½ p.c. Pref.	35—45	+15
Romford 4 p.c. Deb.	88—93	+11

PROVINCIAL EXCHANGES

Bristol Ord.	103—105	+1½
Chester 4 p.c. Pref.	79—81	+2
Ditto 4 p.c. Red. Deb.	96—100	+5

Quotations on the London and Provincial Stock Exchanges

OFFICIAL LIST

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Mar. 26.
1,767,439	Mar. 9	5	5	Alliance & Dublin Ord. ...	91—96
374,000	Dec. 29	4	4	Do. 4 p.c. Deb.	95—100
957,608	Nov. 10	5	5	Assed. Gas & Water U'd'ts Ord.	14/6—15/6
500,000	,,	4½	4½	Do. 4½ p.c. Red. Cum. Pref.	15/—17/-
535,545	,,	4	4	Do. 4 p.c. Red. Cum. Pref.	15/—17/-
336,646	,,		4	Do. 4 p.c. Irred. Cum. Pref.	12/—14/-
561,370	Mar. 9	7	7	Barnet Ord. 7 p.c.	122—127
300,000	Oct. 27	1/4⅜	1/9⅜	Bombay, Ltd.	19/—21/-
690,407	Feb. 23	7	7	Bournemouth 7 p.c. max. ...	123—128*
362,025	Dec. 15		4	Do. 4 p.c. Deb. ...	90—95
659,955	Mar. 2	2½	3½	Brighton, &c., 5 p.c. Con. ...	64—69
855,000	,, 16	6	6	Brit. Gas Light Ord.	71—76
545,000	Dec. 15	5½	5½	Do. 5½ p.c. 'B' Cum. Pref	105—115
120,000	,,	4	4	Do. 4 p.c. Red. Deb.	75—80
10,000	Nov. 6 '33	6	4	Cape Town, Ltd., 4½ p.c. Cu. Pf.	¼—¾
626,860	Feb. 2	6	6	Cardiff Con. Ord.	95—100
24,500	Sept. 29	7	7	Colombo 7 p.c. Pref.	19/—21/-
764,169	Mar. 23	-/11.48	-/9.56	Colonial Gas Assn. Ltd. Ord. ...	¼—¾*
400,000	,,	1/3.30	1/3.298	Do. 8 p.c. Pref. ...	¾—1*
1,748,935	July 22 '40	2	3	Commercial Ord.	32—37
620,000	Dec. 8	3	3	Do. 3 p.c. Deb.	58—63
286,344	Feb. 16	5	5	Do. 5 p.c. Deb.	92—97
807,560	Feb. 23	6	6	Croydon sliding scale	93—98*
644,590	,,	5	5	Do. max. div.	82—87
620,385	Dec. 29	5	5	Do. 5 p.c. Perp. Deb. ...	99—104
179,500	Feb. 9	5	5	East Surrey 'B,' 5 p.c.	65—70
176,461	Dec. 15	5	5	Do. 5 p.c. Deb. (Irred.)...	90—95
250,000	Nov. 10	6	4	Gas Consolidation Ord. 'B' ...	13/6—14/6
250,000	,,	4	4	Do. 4 p.c. Red. Cum. Pref.	14/6—16/6
19,122,910	July 29 '40	3⅜	4½	Gas Light & Coke Ord. ...	12/6—13/6a
2,600,000	,,	3½	3½	Do. 3½ p.c. max.	50—55
4,477,106	,,	4	4	Do. 4 p.c. Con. Pref. ...	66—71
2,993,000	July 8 '40	3⅜	3⅜	Do. 3⅜ p.c. Red. Pref. ...	73—78
8,602,497	Dec. 1	3	3	Do. 3 p.c. Con. Deb. ...	79—82
3,642,770	,,	5	5	Do. 5 p.c. Red. Deb. ...	105—109
3,500,000	,,	4½	4½	Do. 4½ p.c. Red. Deb. ...	102—105
700,000	Mar. 9	3½	3½	Do. 3½ Red. Deb. ...	88—93
5,600,000	May 13 '40	4	8	Imperial Continental Cap. ...	50—55
43,820	Jan. 26	3½	3½	Do. 3½ p.c. Red. Deb. ...	82—87
231,978	Feb. 23	5	5	M.S. Utility 'C' Cons.	73—78
918,657	,,	4	4	4 p.c. Cons. Pref.	77—82
675,000	Nov. 10	†4	†4	Montevideo, Ltd.	65—70
300,000	Dec. 15	7	9	Oriental, Ltd.	95—105
368,537	July 14	6½	3½	Plymouth & Stonehouse 5 p.c.	65—70
621,667	Feb. 9	7½	7½	Portsmouth & Gosport Cons.	87—92
648,999	Sept. 8	1/1	1/1½	Severn Val. Gas Cor. Ld. Ord.	16/—18/-
597,972	Mar. 9	4½	4½	Do. 4½ p.c. Cum. Pref. ...	16/—18/-
2,528,714	,, 2	1/	7½	South East'n Gas Cn. Ld. Ord.	13/6—15/6
1,000,000	,,	-/10½	-/10½	Do. 4½ p.c. Red. Cum. Pref.	15/6—17/6
1,068,869	,,	4	4	Do 4 p.c. Irred. Cum. Pref.	12/—14/-
6,709,895	Aug. 5 '40	4	4	South Met. Ord.	50—55
1,135,812	,,	6	6	Do. 6 p.c. Irred. Pref. ...	76—81
850,000	,,	4	4	Do. 4 p.c. Irred. Pref. ...	60—65
1,895,445	Dec. 29	3	3	Do. 3 p.c. Perp. Deb. ...	75—80
1,000,000	Jan. 12	5	5	Do. 5 p.c. Red. Deb. ...	100—105
1,543,795	Feb. 9	4	4	South Suburban Ord. 5 p.c ...	73—78
512,825	,,	5	5	Do. 5 p.c. Perp. Pref. ...	85—90
500,000	,,	4	4	Do. 4 p.c. Perp. Pref. ...	70—75
250,000	,,	3½	3½	Do. 3½ p.c. Red. Pref. ...	80—85
888,587	Dec. 15	3	5	Do. 5 p.c. Perp. Deb. ...	102—107
750,541	Feb. 9	2	6	Southampton Ord.	63—68
350,000	,,	5½	5½	Swansea 5½ p.c. Red. Pref. ...	93—98
1,076,495	,,	5	5	Tottenham & District Ord. ...	83—88
338,555	,,	5	5	Do. 5 p.c. Pref.	85—90
453,380	Dec. 8	4	4	Do. 4 p.c. Perp. Deb. ...	82—87
1,247,505	Dec. 1	4	‡4	U. Kingdom Gas Cor. Ord. ...	14/—16/-
1,085,952	Nov. 17	4½	4½	Do. 4½ p.c. 1st Cum. Pref. ...	15/6—17/6
772,709	,,	4	4	Do. 4 p.c. 1st Red. Cum.Pref.	15/6—17/6
745,263	June 16	4½	4½	Do. 4½ p.c. 2nd Non.Cum. Pf.	14/6—16/6
1,200,000	Mar. 16	3½	3½	Do. 3½ p.c. Red. Deb. ...	85—90
380,606	Aug. 18	7	6⅔	Uxbridge, &c., 5 p.c.	85—90
1,371,138	Feb. 2	4	4	Wandsworth Consolidated ...	76—81
2,525,768	,,	4	4	Do. 4 p.c. Pref.	72—77
1,343,964	Dec. 15	5	5	Do. 5 p.c. Deb.	99—104
383,745	,,	4	4	Do. 4 p.c. Deb.	82—87
558,342	Mar. 2	5	5	Watford & St. Albans Ord. ...	87—92
300,000	Dec 8	3½	3½	Do. 3½ p.c. Red. Deb. ...	84—89

SUPPLEMENTARY LIST

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Mar. 26.
351,685	Dec. 15	5	5	Brighton, &c., 5 p.c. Perp. Deb.	93—98
28,700	,,	5½	5½	Do. 5½ p.c. Red. Deb. 1942 ...	95—100
415,250	,,	4	4	Bristol Gas Co., 4 p.c. New Deb.	95—100
140,205	Feb. 9	7	7	Cambridge, &c., 7 p.c. Cons. 'B'	105—110
295,932	Mar. 9	5	5	Cheltenham, 5 p.c. Cons.Ord....	83—88
42,500	Dec. 15	4	4	Do. 4 p.c. Perp. Deb....	75—80
150,000	Feb. 23	4	4	Croydon Gas, 4 p.c. Pref. (Irr.)	68—73
130,000	Dec. 29	4	4	Do. 4 p.c. Deb. ...	80—85
146,700	Feb. 9	5½	5½	East Surrey, 5½ p.c. Pref. 'A' ...	85—90
53,220	,, 10	6	6	Do. 6 p.c. Cum. Pref. ...	90—100
	Aug. 19 '40	6	4	Eastbourne, 'B' 3½ p.c....	35—40
239,135	Nov. 17	5	5	Gas Consolidation 'A' Ord. (£1)	11/6—13/6
156,600	Feb. 23	5	5	Hampton C't, 5 p.c. Cons. Ord.	75—80*
18,000	Dec. 29	3½	3½	Malta & Med'n., 7 p.c. 1st Pref.	45—55
10,845	,, 30	3½	3½	Do. 7½ p.c. 2nd Pref.	35—45
50,000	Feb. 23	£5 4 6	£5 4 6	Mid. South. Util., 'A' Cons. 5 p.c.	60—70*
65,000	Aug. 18	5	5	North Middlesex, 5 p.c. Pref. ...	75—80
70,000	Mar. 9	5	5	Plymouth & Stone., 5 p.c. Deb.	95—100
76,501	Dec. 29	4	4	Reading, 4 p.c. Perp. Deb. ...	90—95
74,777	Sept. 30	4	4	Romford, 4 p.c. Debs. (Reg.) ...	88—93
21,000	Dec. 15	5	5	Slough, 5 p.c. Perp. Deb. ...	87—92
211,740	,,	5	5	Southampton, 5 p.c. Red. Deb.	95—100
363,575	Jan. 2	5	5	Tottenham, 5 p.c. Reg. Red. Mt.	97—102
202,019	8—	—	—	Tunbridge Wells, 4 p.c. Scale ...	95—100
135,257	Dec. 8	5	5	Uxbridge &c., 5 p.c. Perp. Deb.	97—102

PROVINCIAL EXCHANGES

					Quotations Mar. 27.
804,948	Mar. 2	5	5	Bath Cons.	95—97
122,577	July 28	6	6	Blyth 5 p.c. Ord.	100—105
1,667,250	Feb. 23	5	5	Bristol, 5 p.c. max.	103—105
120,420	Dec. 15	4	4	Do. 1st 4 p.c. Deb.	101—103
415,250	,,	4	4	Do. 2nd 4 p.c. Deb. ...	100—102
328,790	,,	5	5	Do. 5 p.c. Deb.	110—113
157,150	Feb. 2	5	6½	Chester 5 p.c. Ord.	95—98
92,500	Dec. 15	4	4	Do. 4 p.c. Pref.	79—81
36,430	,,	3½	3½	Do. 3½ p.c. Deb.	78—82
41,890	,,	4	4	Do. 4 p.c. Red. Deb. ...	96—100
542,270	Aug. 11	9	6	Derby Cons.	98—103
55,000	Dec. 16	4	4	Do. 4 p.c. Deb.	75—80
10,000	Aug. 11	10	10	Great Grimsby 'A' Ord. ...	155—165
6,500	,,	10	10	Do. 'B' Ord. ...	155—165
79,000	,,	10	10	Do. 'C' Ord. ...	145—155
732,000	Aug. 25	4	4	Hartlepool G. & W. Cn. & New	61—63
2,167,410	Mar. 2	6	6	Liverpool 5 p.c. Ord.	101—103
245,500	Dec. 15	5	5	Do. 5 p.c. Red. Pref. ...	99—101
306,083	Jan. 15	4	4	Do. 4 p.c. Deb.	98—100
20,000	June 23	5	5	Long Eaton 5 p.c. Pref.	9—11
80,000	,,	5	5	Do. 5 p.c. Deb.	87—92
2,430,267	Feb. 9	5	5½	Newcastle and Gateshead Con.	18/9—19/3
682,856	,,	4	4	Do. 4 p.c. Pref.	84½—85½
776,706	Dec. 29	3½	3½	Do. 3½ p.c. Deb.	83—84
277,285	Nov. 3	5	5	Do. 5 p.c. Deb. '43 ...	99—101
274,000	March 17	5	5	Newport (Mon.) Ord.	86—89
13,200	Sept. 16	8⅔	7	Pontyp'l Gas & W. 10 p.c. 'A'	11½—12½
13,600	,,	6	5	Do. 7 p.c. 'B'	9½—10½
40,000	,,	5	6	Do. 7 p.c. 'C'	9½—10½
106,280	Feb. 9	10	10	Preston 'A' 10 p.c.	150—160
188,219	,,	7	7	Do. 'B' 7 p.c.	110—120
1,806,339	Feb. 23	6½	6½	Sheffield Cons.	123—125*
95,000	Jan. 5	4	4	Do. 4 p.c. Deb.	96—99
332,351	Feb. 16	6	6	Sunderland 6 p.c. max. ...	111—112
192,150	Feb. 9	5	5	Weston-super-Mare Cons. ...	91—95
64,338	Jan. 5	4	4	Do. 4 p.c. Deb.	85—90
33,340	,,	7½	7½	Do. 7½ p.c. Deb. ...	135—140

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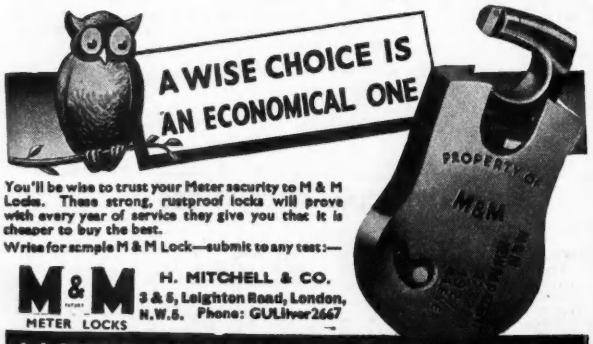

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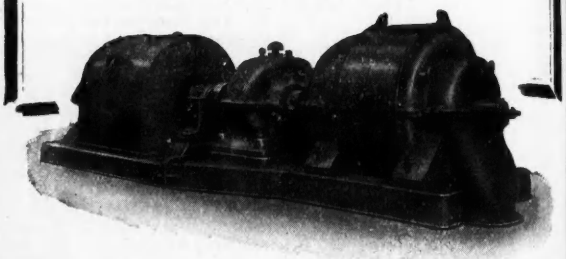

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CONTENTS

EDITORIAL NOTES

Shoulders to the Wheel 55
Advertising in Wartime 55
The Industry in Northern Ireland .. 56

Personal 56
Obituary 56

Letter to the Editor 57
Guildford Warship Week 57
Supporting the Charge in Vertical Retorts 57
Midland Association Meet in Birmingham 57
Canteen for a Munition Factory .. 57
Immediate Needs—and the Future .. 58
Directorate of Gas Supply 58
Institution Research Reports Discussed 61

Town Gas and Kinematic Viscosity. By Arthur Coe (*concluded*) 62
Midland Counties Coke Association .. 69

Gas Products Prices 71
Gas Stocks and Shares 71

THIS WEEK'S ADVERTISERS

	PAGE
Aeraspray Manufacturing Co., Ltd.	47
Alder & Mackay, Ltd.	63
Baldwins Ltd.	51
Bale & Church, Ltd.	73
Bellis & Morcom, Ltd.	45
Blakeley, Firth, Sons & Co., Ltd.	73
Boydell, E., & Co., Ltd.	39
Bratt Colbran, Ltd.	41
British Gas Purifying Materials Co., Ltd.	73
Broadbent, J. C., & Co., Ltd.	73
Cowan, W. & B.	Cover III
Crossley Bros., Ltd.	42
Curtis, A. L., & Co., Ltd.	50
Dempster, Robert, & Sons, Ltd.	73
Derbyshire Silica Firebrick Co., Ltd.	48
Diaphragm & General Leather Co., Ltd.	72
Donkin Co., Ltd. (The Bryan)	Cover II
Ellison Insulations, Ltd.	73
Ether, Ltd.	44
Evans, Joseph, & Sons (Wolverhampton), Ltd.	44
Fluxite, Ltd.	74
"Four Oaks" Spraying Machine Co.	46
Frost, A. E.	73
Gas Meter Co., Ltd.	48
Gas Purification and Chemical Co., Ltd.	73
General Refractories, Ltd.	68
Glover, George, & Co., Ltd.	37
Glover, Thos., & Co., Ltd.	Cover I, 54
Goodall, Clayton & Co., Ltd.	Cover IV
Grant, David & Co.	46
Green & Boulding, Ltd.	73
Hamilton, Archd. H., & Co., Ltd.	50
Harrisons (London), Ltd.	74
Holmes, W. C., & Co., Ltd.	75
Horseley Bridge and Thos. Piggott, Ltd.	45
Humphreys & Glasgow, Ltd.	52
Institute of Chemistry	50
Jeavons, E. E., & Co., Ltd.	73
Keay, E. C. & J., Ltd.	76
Keith Blackman, Ltd.	76
Kings Patent Agency, Ltd.	73
Londex, Ltd.	50
Main, R. & A., Ltd.	66
Menno Compressed Air Greasecup Co., Ltd.	72
Mewburn, Ellis, & Co.	73
Milne's Meters, Ltd.	47
Mitchell, H., & Co.	50
Morton, Joseph, Ltd.	50
New Bowson Coal Co.	72
Newton Chambers & Co., Ltd.	60
Oxley Engineering Co., Ltd.	Cover II
Parkinson, W., & Co.	54
Peckett & Sons, Ltd.	72
Pulsometer Engineering Co., Ltd.	Cover IV
Radiant Heating, Ltd.	42
Radiation, Ltd.	64, 65
Reavell & Co., Ltd.	72
Siebe, Gorman & Co., Ltd.	50
Slingsby, Walter, & Co., Ltd.	48
Sperryn & Co.	53
Stanton Ironworks, Ltd.	74
Staveley Coal and Iron Co., Ltd.	50
Stein, John G., & Co., Ltd.	49
Stewarts & Lloyds, Ltd.	43
Strachan & Henshaw, Ltd.	37
Sutcliffe, Speakman & Co., Ltd.	49
Sutherland Meter Co., Ltd.	40
Thomas & Bishop, Ltd.	71
Trotter, Haines & Corbett, Ltd.	73
Turbine Furnace Co., Ltd.	42
Underpressure Engineering Co., Ltd.	40
Walker, C. & W., Ltd.	63
Waller, Geo., & Son, Ltd.	38
West's Gas Improvement Co., Ltd.	70
West's Piling & Construction Co., Ltd.	Cover IV
Woodall-Duckham Co., Ltd.	59
Trade Cards	71
Appointments Vacant	73
Educational	73
Patents	73
Plant, &c.	73
Plant, &c., For Sale and Wanted	74

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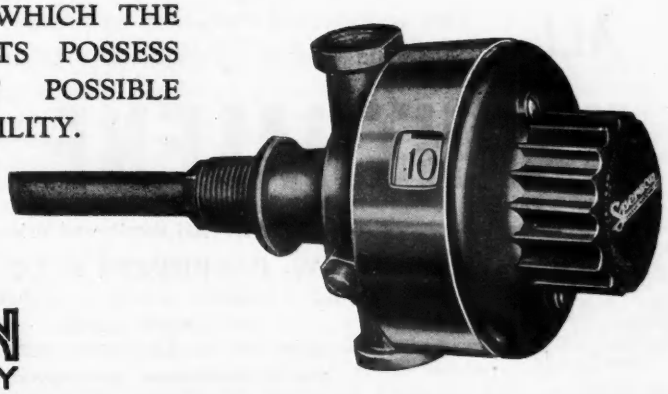

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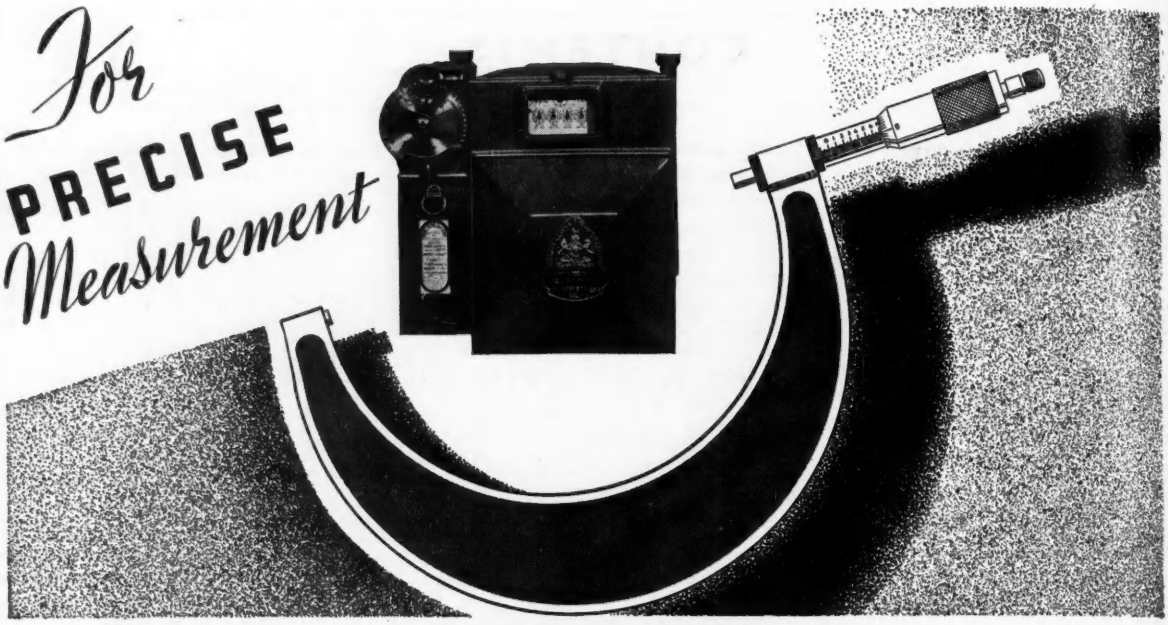

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